TRAUMA GUIDELINES

FOR THE

EMT-III

Prepared by:

Section of Community Health and EMS
Division of Public Health
Department of Health and Social Services
Box 110616
Juneau, AK 99811-0616
(907) 465-3027
(907) 465-4101 (fax)

http://www.hss.state.ak.us/dph/ems/ems_home.htm

Revised January, 1999

INTRODUCTION

These Trauma Guidelines were written in an effort to promote more efficient care and transportation of the severely injured trauma patient.

They were designed to be used in the initial, and continuing, training of EMT-Is, EMT-IIs, EMT-IIIs, and Mobile Intensive Care Paramedics. The EMT-I, EMT-II, and EMT-III examinations for certification include questions which are based on these guidelines.

These guidelines are meant to serve as a framework and provide a general approach to the trauma patient. To maximize the benefit of these guidelines on patient care, prehospital emergency care providers should discuss them with their physician medical directors so that, in addition to the recognition and management of the particular type of traumatic injury, each person involved in the prehospital care of the trauma patient knows:

1. who is in charge of the trauma patient at the scene;

2. what trauma care procedures are authorized for each level of certification and which are appropriate for his or her particular service;

3. what options exist for the transport of the trauma patient (air, ground, water);

    a. how the special transport services, such as an air ambulance, are activated.

    b. at what point in the care of the trauma patient this activation takes place.

4. the emergency medical service's policies and procedures for communicating with emergency department personnel/physicians during the care of the trauma patient; and

5. the emergency medical service's policies and procedures for adequately documenting trauma care.

The Medical Director of the EMS system should develop local protocols to identify significant trauma in the field which is likely to require surgical intervention. Prehospital EMS providers should obtain on-line medical direction as early as possible and provide the following information:

- Brief history of the injury;

- Current status of the patient, including vital signs, physical exam and pertinent history, and any treatment rendered;

- Mode of transport, destination, and estimated time of arrival.

In summary, the physician approved field triage protocols should trigger a well defined and practiced transport process to an appropriate medical facility without delay.

These guidelines are consistent with the material presented in national trauma training programs, such as the Basic Trauma Life Support and Prehospital Trauma Life Support Programs. Readers are encouraged to attend either of these programs and to practice their trauma care skills

frequently. The guidelines contain copyrighted information from the Brain Trauma Foundation regarding the use of hyperventilation in the treatment of patients with severe head injuries.

Readers are encouraged to read the ***Alaska Prehospital Transport and Transfer Guidelines***.

Notes regarding PASG use: Issues regarding the use of the pneumatic anti shock garment in rural trauma and the optimum blood pressure which should be maintained during resuscitation remain unclear. EMTs should be familiar with local and state protocols for PASG use.

Notes regarding assessment related terminology: These guidelines use terms related to patient assessment which are consistent with the National Standard Curriculum, EMT-Basic, Revised 1994. Unless the context indicates otherwise, an "initial assessment" is equivalent to a "primary survey" and a "detailed" assessment is equivalent to a "secondary survey." Other assessment related terms should be self explanatory.

PREHOSPITAL TRAUMA GUIDELINES FOR EMT-III

TABLE OF CONTENTS

TRAUMA

GENERAL POINTS

A. As with any emergency, the trauma scene must be assessed upon arrival for the presence of danger, including fire, hazardous materials, falling debris, highway traffic, etc. First priority should be given to the safety of the rescuer and then to altering the scene to make it a safe working environment, or if necessary, to moving the patient from the scene.

B. All EMTs should be familiar with body substance isolation (BSI) procedures and equipped to implement them. With trauma patients, a minimum of gloves and eye protection is recommended. Some patients will require additional BSI precautions.

C. The prehospital assessment and management of a trauma patient should be performed under the direction of one person. That director should be an individual who has been properly trained in the assessment and management of trauma patients and who has a complete understanding of local and regional triage and transport protocols and capabilities.

D. Every trauma patient requires a thorough, rapid assessment with primary emphasis on the ABCs: airway, breathing, and circulation.

E. Trauma patients often require simultaneous assessment and treatment. Unlike treatment for medical illnesses, treatment for trauma often comes before definitive diagnosis. For example, airway problems and bleeding are the two most common causes of death in a trauma patient. Both must be recognized and treated rapidly, often before you realize what is causing the problem.

F. When evaluating a trauma patient, always consider the mechanism of injury. Violent accidents cause severe injuries. Knowing how a person is injured will help direct the examination of the trauma patient.

G. Trauma patients, even those who appear stable, have the potential for rapidly getting worse and dying.

H. **Trauma patients cannot be treated completely in the field.** They need to go to a medical facility. Trauma patients should be transported as soon as safely possible. Any delay in the field, clinic or emergency room can be harmful to the patient. You should determine how the patient should be transported as soon as possible so that activation of a special transport service, such as an air ambulance, if appropriate, can be performed in a timely manner.

I. In treating trauma patients, concentrate on the life threatening injuries. Don't be distracted by less serious problems (e.g., dislocated ankle). Attention to respiratory rate and depth is essential to identify patients who may need assisted ventilations.

J. Trauma patients may have other medical problems (e.g., diabetes; heart attack).

K. The presence of alcohol or other drugs may mask some of the signs of severe trauma. Assume that the patient's condition is caused by trauma until proved otherwise.

L. Since it is not possible to identify all patients infected with bloodborne pathogens, blood and body fluid precautions should be used for all trauma patients.

M. Trauma care should be preplanned to the extent possible. It may not be possible to contact the physician in the emergency department while you are caring for the severely traumatized patient. However, when communications have been established, you should provide information to the receiving facility as soon as practical so preparations can me made to provide appropriate care for the patient.

N. Triage and transfer protocols should be established by EMS physicians within the community and the protocols should be understood by all prehospital emergency care providers. The goal of these protocols should be to identify major trauma as early as possible so that these patients can be rapidly and safely transferred to definitive care centers. In some circumstances, this may mean waiting on-scene for additional care, in others, it may mean intercepting an advanced life support unit en route. In circumstances where prehospital advanced life support is not available, rapid triage and transport of the trauma patient is indicated.

O. The EMT should always attempt to develop a rapport with the patient, explain procedures, and provide reassurance.

P. These protocols specify 90 mmHg as a target for the patient's systolic blood pressure when providing IV therapy or using the pneumatic shock garment. Currently, there is a great deal of research concerning the optimum systolic blood pressure to be achieved and maintained during trauma resuscitation efforts and readers are advised to consult their local physician medical director when developing or revising standing orders and protocols.

Q. IV solutions should be stored in a warm location and maintained at a temperature as close to body temperature as possible. When administering IV fluids in the field, care should be taken to keep the IV tubing warm and insulated.

R. Medications should be maintained at temperatures consistent with manufacturer's recommendations. Medications that have been subjected to extremes of temperature may be inactivated.

S. If the patient has an altered level of consciousness and the signs, symptoms, or history suggest hypoglycemia, and you are unable to verify the blood sugar level through glucometry, give 50cc $D_{50}W$ (after drawing blood sample). If hypoglycemia is confirmed through glucometry, treat with $D_{50}W$ in accordance with your standing orders.

R. If the patient has an altered level of consciousness and the signs, symptoms, or history suggest a narcotic overdose, give 2.0 mg Narcan.

S. Although the electrocardiogram of most trauma patients should be recorded and evaluated, EMTs are cautioned that dysrhythmias in the trauma patient are usually the result of hypotension or direct injury to the heart and rarely from a primary cardiac cause. Consequently, aggressive management of the trauma takes precedence over pharmacologic management of cardiac dysrhythmias.

ASSESSMENT

A. Airway - is it open and is it clear?

1. Establish unresponsiveness.

2. Position patient appropriately - supine on a firm flat surface, if possible.

B. Breathing - Is the patient breathing spontaneously? Are respirations adequate in rate and depth?

1. Look for:

a. nasal flaring

b. cyanosis

c. rapid respirations (tachypnea)

d. retractions

e. asymmetry of chest wall

f. open wounds or bruising of chest wall

2. Listen for:

a. breathing

b. abnormal breath sounds

c. stridor - indicates partial airway obstruction

3. Feel for:

a. rib fractures

b. crepitus

C. Circulation

1. Check for presence of a pulse.

2. Check rate and quality of pulse.

3. Inspect for obvious bleeding sites.

4. Check blood pressure.

5. Check skin color and temperature.

D. Vital Signs - Frequently obtain and record vital signs as long as patient is in your care.

MANAGEMENT

A. Airway

1. Consider the mechanism of injury and, if indicated, treat for a cervical spine injury, avoiding unnecessary motion, particularly hyperextension and flexion of the patient's neck.

2. Open the airway with a method consistent with the mechanism of injury.

3. If the patient is breathing, maintain the airway with appropriate manual techniques or airway adjuncts.

4. If patient is not breathing, check for clear airway by delivering two initial breaths, watching to make sure the chest rises.

   a. If airway is clear, maintain it with a modified jaw thrust, oropharyngeal airway or nasopharyngeal airway, or advanced airway device approved by the EMT's physician medical director.

   b. If airway is obstructed, clear it in accordance with American Heart Association recommendations and based on the mechanism of injury. Once airway is clear, maintain it with a modified jaw thrust, oropharyngeal airway, nasopharyngeal airway, or advanced airway device approved by the EMT's physician medical director, (e.g. multilumen airway device, endotracheal tube, etc.).

B. Breathing

1. If necessary, assist ventilation with mouth-to-mask or bag-to-mask breathing, or with a flow restricted, oxygen powered ventilation device.

2. Administer high flow oxygen if available.

3. If breathing remains difficult for the patient, and he has an obvious chest injury, add treatment as outlined in Chest Trauma guidelines on page 17.

C. Circulation

1. If patient has no pulse, begin CPR.

2. Control serious bleeding.

3. Keep the patient warm.

4. Start two large bore IV lines with a balanced salt solution, e.g., Ringer's Lactate. (These should be started en route to the hospital or after your initial assessment and management if you are awaiting transportation). Even with apparently stable trauma patients you should have at least one large bore IV with a balanced salt solution.

5. If the patient is hypotensive, place the patient in a supine position with feet higher than head and consider the use of the pneumatic anti shock garment. If indicated by local protocol, inflate and maintain the patient's systolic blood pressure at the level specified in the protocols.

ADDITIONAL THERAPY

A. Morphine is not indicated in a patient with hypotension, altered level of consciousness, head injuries, or respiratory depression. Use as dictated by your standing orders otherwise.

B. Treat cardiac arrhythmias as dictated by your standing orders.

TRANSPORT

A. With the cervical spine immobilized, and the ABCs being supported or stabilized, the trauma patient needs to be immobilized on a backboard and rapidly transported to a higher level medical facility for definitive care. Remember, definitive care for the trauma patient takes place in the operating room, not in a village clinic, an ambulance, or an emergency room.

B. Depending on circumstances, (e.g., while waiting for a plane at the village clinic, or when in the back of the transporting ambulance) continue with detailed assessment and management as outlined in specific injury guidelines.

TRAUMA/HEAD & SPINE

GENERAL POINTS

A. Any trauma patient with an obvious head injury or a history of head injury should have his or her spine immobilized until a cervical spine fracture has been ruled out.

B. In the emergency management phase of acute head trauma, hypoxia and hypotension can be lethal to the patient and must be managed early and thoroughly.

C. Patients with head injuries can get worse quickly, even though they appear stable initially.

D. Alcohol and drugs make the evaluation of head injuries very difficult. Always assume symptoms are the result of the trauma and treat as such.

E. As with all trauma patients, complete therapy for head and spinal injuries must take place in the hospital. Delays at any level can be harmful to the patient.

F. Evaluation of head and spine injuries is part of the detailed examination and should be done only after the patient's ABCs have been evaluated and supported, and he or she is en route to a higher level medical facility or awaiting transportation to that facility.

Routine use of hyperventilation in the patient with head trauma is no longer recommended. Current guidelines, which are endorsed within this document, state that: *The routine use of hyperventilation during the first 24 hours after severe traumatic brain injury (TBI) should be avoided because it can decrease cerebral perfusion during a time when cerebral blood flow is already reduced. If there is neurological deterioration, defined as dilated pupils, rising blood pressure, slowing pulse, posturing or decreasing Glasgow Coma Scale (GCS) then, hyperventilation therapy may be provided at a rate of **20** breaths/minute for adults and **25**/minute for children under 8.*[ã] Normal respirations are: adult – **12** breaths/minute, child, 8 years of age or less – **20** breaths/minute.

SPECIFIC ASSESSMENT

A. Hypotension in an adult, except as a terminal event, is not caused by isolated head injuries. If you have a head injured patient with hypotension, you should assess the abdomen and femurs for additional injuries.

B. Inspect for any lacerations, asymmetry, bleeding sites, Battle's sign or clear fluid from ears or nose.

C. Gently palpate for fractures, lacerations or depressions. Do not remove clots from wounds.

D. Evaluate and record mental status. The patient's level of consciousness is the best indicator of brain function. The Glasgow Coma Scale relates level of function to a numerical value, as follows:

GLASGOW COMA SCALE

BEST EYE RESPONSE

Adult & Child	Infant (12 months)	Points
Spontaneous	Spontaneous	4
To Command	To Voice	3
To Pain	To Pain	2
None	None	1
	TOTAL	

BEST VERBAL RESPONSE

Adult & Child	Infant (12 months)	Points
Oriented	Coos and Babbles	5
Confused	Irritable Cry	4
Inappropriate	Cries to Pain	3
Incomprehensible	Moans to Pain	2
None	None	1
	TOTAL	

BEST MOTOR RESPONSE

Adult & Child	Infant (12 months)	Points
Obeys Command	Spontaneous Movements	6
Localizes Pain	Withdraws (Touch)	5
Withdraws	Withdraws (Pain)	4
Flexion to Pain	Flexion to Pain	3
Extension to Pain	Extension to Pain	2
None	None	1
	TOTAL	

Total: Best Eye Response	
Total: Best Verbal Response	
Total: Best Pain Response	
Glasgow Coma Score	

D. Evaluate pupil size and reactivity.

E. Evaluate spinal cord integrity in conscious patient by recording ability to move extremities to command. Perform gross sensory exam with sharp sensation or light touch.

F. Evaluate spinal cord integrity in an unconscious patient by recording presence or absence of extremity movement to painful stimulus.

G. Frequent repetitive examinations on the way to the hospital are essential as a head injured patient may deteriorate rapidly. Changes in the exam can be more important than the initial exam.

H. Record each examination of the patient.

INITIAL MANAGEMENT

A. If indicated by mechanism of injury, immobilize spine with blanket roll/cervical collar and rigid fixation to a backboard. (A soft collar is inadequate for cervical spine immobilization.)

B. Administer high flow oxygen if available. If you are breathing for a head injured patient, maintain normal respirations, unless there are active seizures or signs of neurological deterioration, as outlines in "D." Normal respirations are: adult – **12** breaths/minute, child, 8 years of age or less – **20** breaths/minute.

C. Treat bleeding as indicated with pressure dressings, taking care not to put undue pressure on possible fracture sites.

D. If head injury is suspected, the GCS score is less than 8, and active seizures or one or more of the following signs of brain herniation are present, hyperventilate the adult patient with high flow oxygen at a rate of **20** breaths/minute, (for a child less than 8 years of age, the rate is **25** breaths/minute).

- Fixed or asymmetric pupils
- Abnormal flexion or abnormal extension (neurologic posturing)
- Hypertension and bradycardia in conjunction with altered mental status
- Intermittent apnea
- Further decrease in GCS score of 2 or more points

Do not hyperventilate unless the above criteria are met.

ADDITIONAL THERAPY

A. Patients with altered level of consciousness or pupil irregularities who are not hypotensive should have an IV started using a balanced salt solution infused at a TKO rate.

B. If the patient is hypotensive, treat for shock, even if there are coexisting head injuries. Shock treatment should include at least one large bore IV with a balanced salt solution.

C. Morphine is not indicated in a patient with hypotension, altered level of consciousness, head injuries, or respiratory depression. Use as dictated by your standing orders otherwise.

D. Treat cardiac arrhythmias as dictated by your standing orders.

TRANSPORT

A. Continue evaluation and maintain stabilization of spine en route to a higher level medical facility.

B. Continue with detailed assessment and management as outlined in the specific injury guidelines.

TRAUMA/CHEST

GENERAL POINTS

A. Chest trauma can lead to severe internal injuries which are often difficult to specifically diagnose. A history of chest trauma should lead you to suspect a serious injury and patients should be treated with that expectation.

B. Three major chest injury syndromes can lead to rapid death. They must be recognized and treated rapidly. They include:

1. Bleeding from rupture of a major vessel;

2. Mechanical decrease of cardiac output (which may be caused by cardiac tamponade or cardiac contusion with or without arrhythmia);

3. Respiratory distress (which may be caused by tension pneumothorax, flail chest or an open chest wound).

C. As with all trauma patients, complete therapy for chest injuries must take place in the hospital. Delays at any level can be harmful to the patient.

D. If chest injury interferes with breathing, it becomes part of your initial assessment and management of the trauma patient. Otherwise, evaluation of chest trauma is part of the detailed assessment and should be performed only after the ABCs have been evaluated and supported.

E. Objects penetrating the chest wall should be stabilized and not removed.

SPECIFIC ASSESSMENT

A. Look at the bare chest wall for asymmetry of movement, distended neck veins, open wounds, deviation of the trachea and bruises. Inspect the entire chest wall, front and back, maintaining cervical immobilization and log rolling when indicated.

B. Listen to the chest in all lung fields anterior and posterior for the movement of air.

C. Feel the chest for tenderness, rib and clavicle fractures and crepitus.

D. Obtain and record vital signs frequently.

E. Reexamine the chest frequently, observing for changes.

F. Record all findings.

INITIAL DIAGNOSES AND CONSIDERATIONS

A. Respiratory distress, despite an open airway, may suggest a tension pneumothorax, a flail chest, or an open chest wound.

1. Signs of a tension pneumothorax include the presence of unilateral breath sounds, distended neck veins, crepitus and tracheal deviation.

2. Signs of a flail chest may include paradoxical movement of the chest wall.

3. Signs of an open chest wound include breaks in the chest wall, associated subcutaneous emphysema, and to and fro movement of air from the chest wound.

B. Hypotension suggests disruption of a major vessel, cardiac tamponade or a cardiac contusion.

1. Signs of disruption of a major vessel include hypotension without evidence of external bleeding, and an appropriate mechanism of injury (e.g. steering wheel injury).

2. Signs of cardiac tamponade include history of blunt or penetrating chest trauma, the presence of distended neck veins and muffled heart sounds.

3. Signs of cardiac contusion include a history of blunt chest trauma and cardiac arrhythmias.

INITIAL MANAGEMENT

A. Manage ABCs as outlined in the general guidelines.

B. Administer high flow oxygen via nonrebreather bag, if available.

C. Manage specific injuries:

1. Flail chest (paradoxical respirations, respiratory distress)

a. Stabilize the flail segment with a bulky dressing and tape.

b. If the patient is immobilized and it is possible to do so, position the patient lying on the injured side.

c. Assist ventilation with positive pressure oxygen if available.

2. Tension pneumothorax (Jugular venous distention, respiratory distress, unilateral or decreased breath sounds)

    a. If a penetrating chest wound has been sealed, temporarily unseal the wound and allow air to escape.

    b. Transport patient lying on injured side if spinal immobilization permits and it is tolerated by the patient. Otherwise, place the patient in the most comfortable position.

    c. Perform large bore needle decompression by placing large bore needle at anterior second intercostal space in the midclavicular line. Use a flutter valve if available.

    d. Assist ventilation with positive pressure oxygen if necessary.

3. Open chest wounds (breaks in the chest wall, associated subcutaneous emphysema, and to and fro movement of air from the chest wound)

    a. Cover with a sterile occlusive dressing taped on three sides.

    b. Observe closely for signs of developing tension pneumothorax.

4. Cardiac tamponade or contusion (distant heart sounds, JVD, dysrhythmias)

    a. Treat as for hypotension.

5. Hypotension

    a. Supine position with feet higher than head.

    b. If the patient is hypotensive, consider the use of the pneumatic anti shock garment. If indicated by local protocol, inflate and maintain the patient's systolic blood pressure at the level specified in the protocols.

    c. Start two large bore IV lines with a balanced salt solution, e.g., Ringer's Lactate. (These should be started en route to the hospital or after your initial assessment and management if you are awaiting transportation). Even apparently stable trauma patients should have at least one large bore IV with a balanced salt solution.

ADDITIONAL THERAPY

A. Patients with significant chest injury, or mechanism of injury, should have at least one large bore IV started using a balanced salt solution, even if they are normotensive.

B. Morphine is not indicated in a patient with hypotension, altered level of consciousness, head injuries, or respiratory depression. Use as dictated by your standing orders otherwise.

C. Treat cardiac arrhythmias as dictated by your standing orders.

TRANSPORT

A. Patients with major chest injuries require rapid transport.

B. Continue ongoing evaluation and stabilization of chest injuries en route to a higher level medical facility.

C. Continue with detailed assessment and management as outlined in the specific injury guideline.

TRAUMA/ABDOMINAL

GENERAL POINTS

A. Prehospital care of abdominal injuries should focus on quick treatment of internal bleeding and wound care.

B. Penetrating trauma injures the area of entry and may damage any tissue along the line of penetration.

C. Blunt trauma may be widely transmitted and cause damage to any or all organs within the abdominal cavity.

D. Blunt trauma to the abdominal cavity may also cause injury to organs outside the abdominal cavity. These include internal chest organs. Ongoing reevaluation of the abdomen requires you to recheck the chest also.

E. As with all trauma patients, complete therapy for abdominal injuries must take place in the hospital. Delays at any level can be harmful to the patient.

F. Evaluation of abdominal trauma is part of the detailed assessment, it should be performed only after the patient's ABCs have been evaluated and supported, and the patient is en route to a higher level medical facility or awaiting transportation to that facility.

G. Objects penetrating the abdominal wall should be stabilized and not removed.

H. Any organs protruding from abdominal wounds should be covered with moist gauze and not replaced.

SPECIFIC ASSESSMENT

A. Look at the bare abdomen front and back for any open wounds, evisceration, abrasions or bruises.

B. Feel the abdomen for tenderness and rigidity.

C. Estimate the initial circumference of the abdomen.

D. Obtain and record vital signs frequently.

E. Frequent rechecks of tenderness, rigidity and circumference are important. Hypotension, increasing circumference and rigidity are signs of intra-abdominal bleeding.

F. Record all findings.

MANAGEMENT

A. Manage ABCs as outlined in the general guidelines.

B. Treat hypotension:

1. Supine position, with feet higher than head.

2. Administer high flow oxygen via nonrebreather bag, if available.

3. PASGs: The use of the pneumatic antishock garment in the patient with abdominal trauma is controversial. If the patient is hypotensive, consider the use of the pneumatic anti shock garment. If indicated by local protocol, inflate and maintain the patient's systolic blood pressure at the level specified in the protocols. Do not inflate the abdominal section if the patient has an evisceration.

4. Start two large bore IV lines with a balanced salt solution, e.g., Ringer's Lactate. (These should be started en route to the hospital or after your initial assessment and management if you are awaiting transportation). Even apparently stable trauma patients should have at least one large bore IV with a balanced salt solution.

5. Keep patient warm.

C. Cover any protuding organs with sterile saline dressings.

ADDITIONAL THERAPY

A. Patients with significant abdominal injury, or mechanism of injury, should have at least one large bore IV started using a balanced salt solution, even if they are normotensive.

B. Morphine is not indicated in a patient with hypotension, altered level of consciousness, head injuries or respiratory depression. Use as dictated by your standing orders otherwise.

C. Treat cardiac arrhythmias as dictated by your standing orders.

TRANSPORT

A. Continue ongoing evaluation and stabilization of abdominal injuries en route to a higher level medical facility.

B. Continue with detailed assessment and management as outlined in the specific injury guidelines.

TRAUMA/EXTREMITIES

GENERAL POINTS

A. In the severely injured patient, injuries to extremities take a relatively low priority of management.

B. Almost all extremity hemorrhage can be controlled by direct pressure or pressure dressings. Very rarely will a tourniquet be required.

C. As with all trauma patients, complete therapy for extremity injuries takes place in the hospital. Delays at any level can be harmful to the patient.

D. Evaluation of extremity trauma is part of the detailed assessment and should be performed only after the patient's ABCs have been evaluated and supported.

E. Consider femur or pelvic fractures any time the degree of shock seems greater than indicated by the amount of external bleeding, or any time the mechanism of injury suggests the possibility of a femur fracture.

SPECIFIC ASSESSMENT

A. Look for obvious deformities, abrasions, bruises, bleeding sites, amputated parts and protruding bones.

B. Feel for fractures, crepitus, and dislocations.

C. Check sensation distal to deformities with light touch and sharp sensation.

D. Check pulses distal to deformities.

E. Check movement distal to deformities.

MANAGEMENT

A. Manage ABCs as outlined in the general guidelines.

B. Splint all possible fractures by immobilizing the fracture site as well as the joint above and below the fracture.

C. Splint all open fractures without attempting to replace protruding bones back into wounds.

D. Straighten grossly angulated extremities that would be difficult to splint. By applying gentle traction, align the extremity in its normal anatomical position.

E. Immobilize all injured joints in the position found, unless no pulse is palpable distal to the joint.

F. Straighten any grossly angulated extremity or joint if there is no palpable pulse distal to the angulation. By applying traction, align the extremity or joint in its normal anatomical position.

G. Splint all suspected femur fractures, using traction splinting devices as indicated.

H. PASG's may be used to splint lower extremity fractures.

I. Amputated parts should be wrapped in sterile gauze moistened with normal saline, protected from contamination (e.g., placed in a sterile rubber glove or ziplock bag) and put in ice water.[1] Do not allow the tissue to freeze. Amputated parts should be transported with the patient if possible. Label container with the patient's name, date and time.

J. Treat hypotension:

1. Supine position with feet higher than head.

2. Administer high flow oxygen via nonrebreather bag, if available.

3. PASGs: inflate and maintain systolic pressure of patient at the level specified by local guidelines. Do not inflate the abdominal section if the patient has an evisceration.

4. Start two large bore IV lines with a balanced salt solution, e.g., Ringer's Lactate. (These should be started en route to the hospital or after your initial assessment and management if you are awaiting transportation). Even apparently stable trauma patients should have at least one large bore IV with a balanced salt used by

5. Keep patient warm.

ADDITIONAL THERAPY

A. Patients with significant extremity injury (femur fracture, amputation) should have at least one large bore IV started using a balanced salt solution, even if they are normotensive.

C. Morphine is not indicated in a patient with hypotension, altered level of consciousness, head injuries, or respiratory depression. Use as dictated by your standing orders otherwise.

---

[1] An increasing number of communities in Alaska are developing replantation capabilities. Emergency medical services agencies should consult with local and regional replantation specialists to optimize protocols and standing orders.

D. Treat cardiac arrhythmias as dictated by your standing orders.

TRANSPORT

A. Continue reassessing the patient en route to a higher level medical facility.

Pneumatic Anti Shock Garment (P.A.S.G) Guidelines

Note: The American College of Surgeons states in their Advanced Trauma Life Support Guidelines that the efficacy of pneumatic anti-shock garment in the rural setting remains unproven and, in the urban prehospital setting, controversial. These protocols specify 90 mmHg as a target for the patient's systolic blood pressure. Currently, there is a great deal of research concerning the optimum systolic blood pressure to be achieved and maintained during trauma resuscitation efforts and readers are advised to consult their local physician medical director when developing or revising standing orders and protocols.

1. **Initial Assessment**
   - a. Maintain adequate ABC's
   - b. Control external hemorrhage

2. **Detailed Examination/Rapid Trauma Assessment**
   - a. Assess all injuries
   - b. Obtain vital signs and assess chests sounds bilaterally.
   - c. Record vital signs and pertinent information as patient care permits

3. **Airway Protocol**

4. PASG Indications
   - a. Pelvic or multiple leg fractures exist. If patient is normotensive, inflate only until fractures are immobilized
   - b. Signs of shock are present (rapid, weak pulse, pale, clammy skin, altered level of consciousness, low blood pressure, etc.)

5. Application and Inflation Procedures
   - a. Before application, remove shoes, belt, and pants if time and patient care permits. If you are not able to remove the patient's clothing, empty the patient's pockets.
   - b. Inflate leg sections until easily dented with finger or until systolic blood pressure is 90 mmHg
   - c. Recheck blood pressure
   - d. If systolic blood pressure is less than 90 mmHg, inflate the abdominal section until easily dented with finger or systolic blood pressure in 90 mmHg.
   - e. Recheck blood pressure
   - f. If further pressure is needed, inflate the legs and then the abdominal section until one of the following occurs:
     - i. patient's blood pressure is 90 mmHg
     - ii. pop off valves release
     - iii. velcro fasteners begin to slip

6. **Special Points**
   a. The PASG should be inflated on the basis of the patient's blood pressure and not the pressure within the suit
   b. DO NOT DEFLATE the PASG in the field except in the patient in cardiogenic shock who develops pulmonary edema and/or worsening vital signs. In this case, seek advice from ALS base/hospital ER.
   c. Be alert for pressure changes caused by altitude and temperature variations.

7. Contraindications
   a. Pulmonary edema
   b. DO NOT inflate abdominal section if the patients is obviously pregnant, has protruding bowels or an impaled object in the abdominal area.
   c. Known diaphragmatic rupture
   d. Uncontrolled hemorrhage outside the confines of the garment, e.g. thorax, upper extremity, scalp, face or neck.

Notice Regarding Reprinting This Document

The material in this publication was developed by the Section of Community Health and EMS which hereby authorizes individuals and agencies to reprint this publication in part or in its entirety for the purposes of emergency medical services planning, administration, training, or patient care, so long as proper credit is given.

The text of this document is available for download from the section's web site at:

http://health.hss.state.ak.us/dph/ems/ems_home.htm